

The

FLASH!

The Newsletter of
The **Colorado Radio Collectors**
Antique Radio Club

Volume 34, Issue 1

Next CRC meeting - January 8th

Jan./Feb. 2023

ABCs of Reproduction Batteries

Part 2 of 2

"B" & "C" Batteries
by Bill Potorti, CRC member

In the previous Flash, (Nov./Dec. 2022 Vol.33-Issue 6), Bill Potorti revealed how to make reproduction "A" batteries. This is a continuation of that presentation, demonstrating how to make the "B" & "C" batteries.

- The Editors

As those of you who have worked on early radios know (mainly from the 1920's), they ran on an external power source, usually batteries, unless you were fortunate enough to have power running to your home and could use one of those new-fangled battery eliminators!

There are generally 3 types of batteries used in these early battery-operated radios.

- The A batteries that supply power to the filaments;

- The B batteries power the plates. Typically, they are 45 volt packs, sometimes tapped at 22½ volts. They also can be linked in series and;

- The C batteries (not always used) provided negative bias to some tubes, usually at -4.5 volts or -9 volts. The A and C batteries are fairly consistent in size, but the B batteries come in all shapes. Most C batteries are the same size (it's still helpful to have the label). B battery sizes vary quite a bit.



Where to begin? Normally, I start by determining which battery I want to reproduce and obtain a label for that battery. The label provides the dimensions for your battery box. I have the following in my collection. If you drop me a line at billpot@gmail.com, I'd be happy to send you an image file of these:

- Burgess #6,
- Burgess 3045,
- Burgess 5038,
- Burgess 5156,
- Eveready 711,
- Eveready Columbia #6

For additional sources see the Resource section at the end of this article.



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Newsletter for The **Colorado Radio Collectors** club, founded in the Fall of 1988.

"Dedicated to the preservation and education of wireless, antique radio, television and associated equipment."

CRC MEETINGS: Meetings are held on the 2nd Sunday of every other month starting in January (except May is the 3rd Sunday) at 1:00 pm. The meetings consist of business, "show & tell", raffles, auctions, swap meets, technical discussions and other subjects of interest. Visitors are welcome!!

CRC MEMBERSHIP: Current annual dues are \$20 and membership in the CRC runs from July to June. New memberships will be prorated to the following June. Members are entitled to attend meetings, participate in our Spring show and our Fall auction, and receive our newsletter, **The Flash!**. Submit dues payable to: **Merril Campbell - 4723 Woodbury Dr. - Colorado Springs, CO 80915**

UPCOMING EVENTS: January 8th, CRC meeting at 1PM. Location **The Lone Tree library**, a **Pizza Party** is planned. March 12th, CRC meeting. Location TBD. March 26th, **Vintage Voltage Show**. I-25 at 120th Ave. Details later. May 21st, CRC meeting. Location TBD.

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MESSAGE FROM THE PRESIDENT

Hello everyone. I hope you are well. This can be a busy time of the year, it sure is at my house.

We have some fun things coming up. First, our meeting in January will have food! We are planning a pizza party. Please take note that we are at a new location - **The Lone Tree Library**. For details, see the last page of this newsletter. And then we have our spring show. Rich Kuberski and Ralph Brands (thanks guys) are already figuring out the layout of the space and working with the coordinators of the Vintage Voltage show to ensure we have what we need. Last year was a great experience and we are expecting the same this year. Mark March 26th on your calendars!

I'd like to thank Mike Cook for stepping in to run the November meeting as I was called out of town. It's nice to know Mike is there to back me up when needed.

We always could use articles for the Flash. It could be anything - a story about a radio that you found, or about a restoration you did to the case or the internals, or a historical article. Please send your articles to Steve Touzalin or Larry Snyder.

I wish you all a very happy and safe holiday season. See you in January.

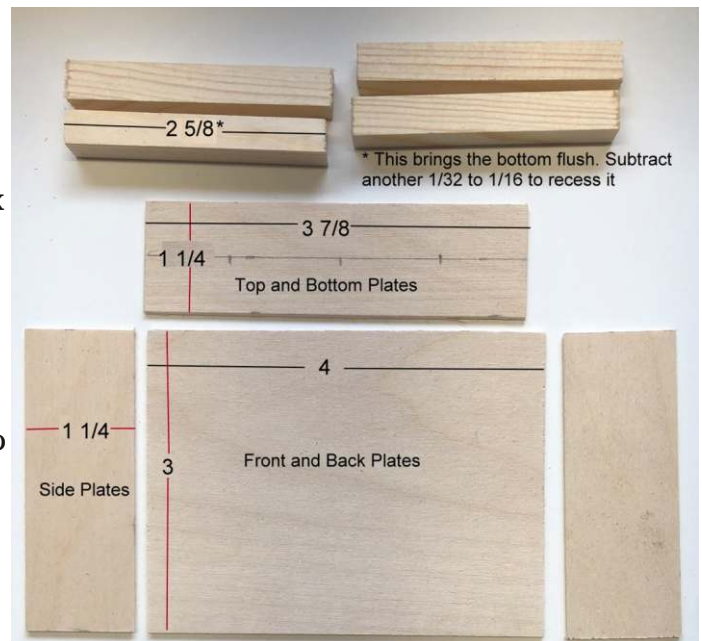
Paul

Constructing the Case

The stock I use for the B and C batteries is 1/16 inch thick basswood. 1/16 inch approximates the thickness of the old battery housings. I also use 3/8 inch square dowels to stiffen up the case. A batteries are cylindrical and I use plastic tubing for them.

For this primer, I am making a couple of C batteries. The dimensions for this case, and for most C batteries, is 4 inches wide x 3 inches tall, by 1 3/8 inches deep. I find that the easiest way to cut this 1/16 inch material is with a straightedge and a sharp utility knife. When cutting across grain, you'll need to score it several times. It cuts very easily with the grain. You'll need to cut front, back, 2 sides, top and bottom. Remember to cut your sides allowing for the thickness of the front and back panels, so when it's glued up, it is the width of the box from the side (1 3/8 in this example). The top and bottom panels are the same width as the side panels, but slightly shorter in length to allow for the thickness of the side panels.

Take the 3/8 square dowel and cut 4 pieces to length. These are used as stiffeners, and also gluing blocks. Their length is determined by subtracting the top offset and the thickness of the top and bottom plates from the height of the box dimension. I like having the bottom plate slightly recessed, so I will subtract and extra 1/32 to 1/16 inch. When making larger B batteries, I will also add short sections width wise along the top and bottom to add more support.



At this point, you need to consider what type of terminals you're going to use, as this determines the offset of the top panel from the top of the box. I try to design it so that there is about 1/4 inch from the top plate to the top of the case. I'll be using epoxy to fill in the void. In this case, I'm using Fahnestock clips. I have also used knurled nuts with other batteries. The setup I'm using feeds a 1 inch #6-32 machine screw through the Fahnestock clip. 2 nuts are screwed to the underside of the clip, along with a #6 washer. This provides about a 1/4 inch gap between the washer and the bottom of the clip.



You'll need holes drilled through the top plate to accommodate this setup. Using your label as a guide, drill holes through the top plate approximately in line with the voltage markings on your label. Thread your Fahnestock clip setup through those holes and lightly fasten on the inside with another washer and nut.

All pieces cut, it's time for assembly. When gluing the dowels, it can be helpful to mark on the front and back panel the location of the dowels. In this case they are set $5/16$ inch from the top ($1/4$ offset + $1/16$ top plate thickness), and $1/16$ inch in from the sides. The bottom recess should take care of itself, but you can also mark that spot. Lay your front and back pieces down, apply glue to the dowels, and place them in position. Let them set up thoroughly.

Next, we attach the 2 sides. I use a trick when gluing these. On the dowel, I apply 3 beads of glue, leaving a gap between them. I apply a thin bead of glue to the edge of the side panel, and then put 2 dabs of superglue in the gaps on the dowels. When you attach the side panels, the super glue will grip right away, and hold everything in place while the PVC glue dries. Attach both side panels to the same front or back panel. Let it dry.

Now take the remaining panel, apply glue to the dowels and slip it in between the 2 sides. Often times I have to slightly spread the sides apart to fit in the other panel, which is helpful in applying pressure. If you have a loose fit, stretch a couple of pieces of blue painters tape across the joints to pull them tight.

After all is dry, I take some gray spray paint and paint the top and bottom edges of the box, so that the edges don't look like wood, but more like old paper.



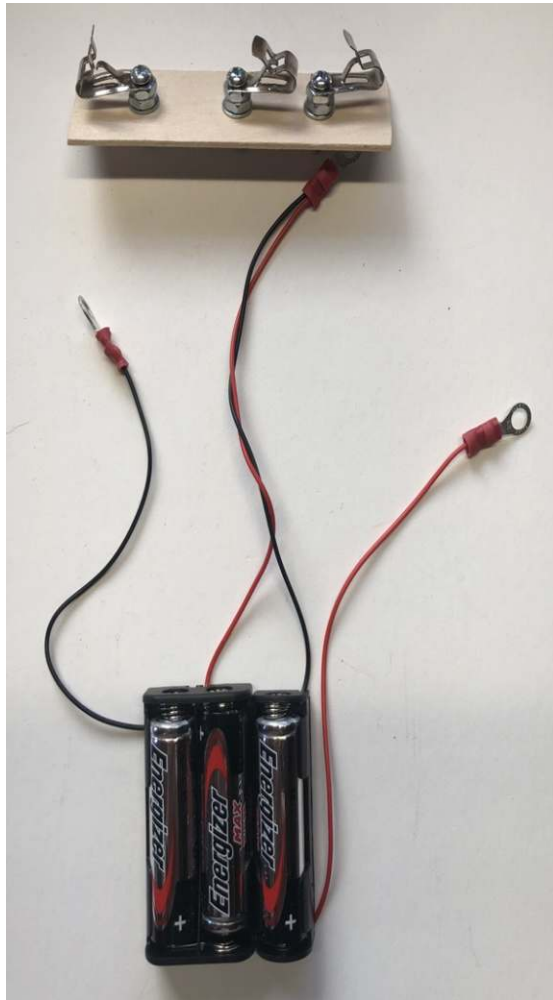
Battery Installation

You will need battery holders, depending on the type of battery you're building. The C battery I'm building here is fairly straightforward. It has terminals for 3v, and 4.5 v. 3 AA batteries will provide that. I use a double and a single battery holder wired together and tapped at 3v.



For this build, solder your 2 battery holders together and add a connector where they join. I like to leave my leads long, so I'm able to slide the holders out of the box to replace the batteries. I add ring type terminal connectors on the end of the leads (the red ones).

Before gluing the top on, I find it easier to attach the battery connectors to the underside of the top, and tighten everything down now, rather than trying to reach in with a long screwdriver afterwards. Check your connections with batteries installed with a multimeter to make sure you're getting the voltages at the correct points. Remember, in the case of a C battery, you're providing negative, rather than positive voltages. Glue the top down to the tops of the dowels.



Next, we get the box ready for epoxy. Take some clear silicone caulk (don't use a colored caulk, as it may broadcast through the epoxy) and caulk along the edges of the top, including the corners, and around the bottom of the terminals where they enter the box. You don't want to completely cover everything-you do want the epoxy to have something to adhere to. That being said, it's VERY important to seal any cracks where the epoxy may leak through. It's very good at finding the smallest openings. Don't ask me how I know this! A toothpick is handy for getting the caulk into cracks.

Follow the instructions on mixing the epoxy you're using. I have been using a product from Alumilite with success. If you've used epoxies for other projects, you may have a different preference. This is a thin pour, and I've found that epoxies designed for thicker pours (river tables and the like) don't always work well with this thin of a pour. Be mindful of the dyes used in coloring your epoxy-some epoxies aren't particular, and others are. A little dye goes a long way, usually a drop or 2 is all that's needed. Make sure your battery box is on a level surface. After you've poured, give it time to cure, usually overnight. If you are using knurled nuts, DO NOT let any epoxy dry on any exposed threads of the screws. It's almost impossible to remove once it's cured. Trust me on this!



Attaching the Label

Rarely will you get a perfect fit around the edges of your box. More than likely you'll have some edges sticking proud. Take some sandpaper and flush everything up as best you can. This will give your label a better chance of adhering.

Assuming you've been successful to this point, it's time to prepare your label. I print mine out on card stock with a laser printer. Experiment with what you have. Trim your label. Oftentimes I will leave a little extra on the width on one end, so that I have a good wrap around. This particular label wasn't wrapping around well (a tiny bit short) so I made an extension that I applied around the side first. You'll find with some of the larger batteries (i.e., B batteries), the labels will be in 2 parts-front and back. I've found that spraying the front sides of the label with a couple of coats of clear satin lacquer before applying offers some abrasion resistance.

Pre-fit your label.

Line it up on your box and bend it around. No need to hard crease it, just enough so that you don't need to fuss with the alignment after you've applied the glue. Give the back a good coating of spray adhesive and apply.



OLD

Vs.



New

All that's left is to attach the bottom plate. Drill 4 small holes at the corners and into the dowels, paint the bottom a color of your choosing, and attach with 4 small screws.



Notes on B Batteries

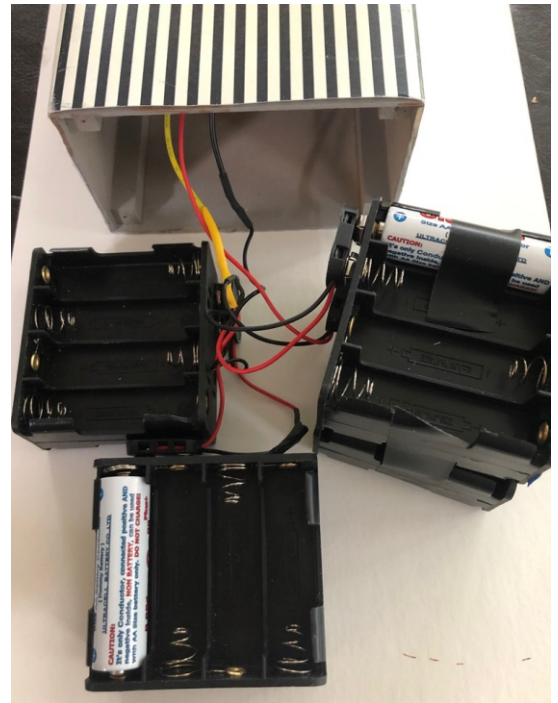
Construction of the box for a B battery is almost identical to that described above. Obviously, the dimensions will need to be adjusted to the size of the battery. Because the batteries are typically larger than C batteries, I add a little extra bracing with the 3/8 inch dowel along the top and bottom of the case.



I like using brass knurled nuts (8-32) as my terminals, 2 per post, the bottom one placed upside down. A brass 8-32 x $\frac{3}{4}$ inch screw with a washer under the top plate completes the setup.

B batteries typically provide 45v. You can reach this by wiring 5 9v batteries in series. It becomes trickier when the battery is center tapped at 22 $\frac{1}{2}$ volts. You can't get there with 9 volt batteries, but you can with 30 AA (or AAA) batteries wired in series and tapped at 15 batteries. In fact, if you look at the label of most B batteries, it will say 'contains 30 cells'.

The trick is in the battery holders. I have found holders that hold 8 batteries at a time. 4 of them wired together give me a total of 32 slots for batteries. Since we only need to use 30, I shunt two of the compartments with 'placeholder' or dummy batteries. You could just as easily solder a wire across the compartments to shunt them, but I think the use of the placeholders is a more elegant solution. Think of it as 2 banks of 15 batteries (with the shunts installed). Add a lead where the 2 banks come together, and you have your 22 ½ volt tap. The rest of the build is just like the previous one for the C battery.



Resources for A, B, & C Reproduction Batteries

Plastic tubing - available from Tapplastics (<https://www.tapplastics.com>) sold in 6' sections shipped in two - 3' sections. 2½ o.d x 2 1/4 i.d

General Circle Cutter #55 – Various sources. Amazon, Home Depot, etc.

J.B. Weld Kwik – most home stores

C cell battery holders – best source I've found is eBay

1/16 Basswood - I've purchased from Hobby Lobby, but it can be a little pricey. Amazon has a couple of dealers that sell it in packs, which are more reasonable.

3/8 inch square dowels - Home Depot, and probably other home stores

Fahnestock Clips - Sal's (<http://www.tuberadios.com/capacitors/>) probably the cheapest. Radio Daze, as well as AES (tubes and more) also stock them.

Knurled Nuts - Home Depot for small lots. Amazon has larger packs available at a decent price. I use 8-32 size.

Epoxy - I've been using a product called 'Amazing Clear Cast' made by Alumilite with good success. It's available at Hobby Lobby, directly through Alumilite, Woodcraft, and elsewhere. You can't use water based dyes with it so choose your dyes accordingly. Don't buy them through Amazon-they'll cost twice as much.

Battery Holders - Amazon has a good selection, usually in packs

Placeholder (Dummy) Batteries - Ebay or Amazon

Battery Labels - This can be one of the harder parts of the project. Sonny at Radiolaguy has a decent selection <https://www.radiolaguy.com>. There are some here:

<https://www.byan-roper.org/steve/steve-at-play/antique-electronics-and-2/hunter-compton-battery.html>

You may have some luck doing a google search, but my experience with this has been spotty. I have the following in my collection. If you drop me a line at billpot@gmail.com, I'd be happy to send you an image file of these: Burgess #6, Burgess 2045, Burgess 5038, Burgess 5156, Eveready 711, Eveready Columbia #6

Want Ads

FOR SALE: Starting to gradually sell off restored radios from my extensive collection to club members and friends. Prices are very reasonable and will gladly negotiate. Range from the early 1920's to mid 1950's. Mostly wood radios from the 1930's...my favorite styles! David Boyle, Castle Rock Area. Please email: djboylesr@msn.com

FOR SALE: Tube Radios - Tombstone, Cathedral and Novelty Transistor Radios. I have collected radios of all types for 35 plus years and now it is time to let them go to new homes. I have over 250 tube type and over 5,000 transistor (both novelty and shirt pocket type). Please call 303-2381384 Thank You, Ron Smith. radios4us@aol.com

REPAIR SERVICE: Radio repairs for club members. Reasonable rates. Good references. Call David Boyle 303-681-3258

Wanted: Articles for the Flash! Contact Larry at Lsnyder200@cs.com or Steve at stevetou@comcast.net.

6 RADIO IN THE HOME May, 1925

EVEREADY HOUR
EVERY TUESDAY AT 9 P. M.
(Times Standard Time)
For real radio enjoyment tune in the "Eveready Group." Broadcast through stations—

WEAF	New York	WFI	Philadelphia
WJAB	Pittsburgh	WCAE	Pittsburgh
WEEI	Boston	WOR	Buffalo
WEAB	Cleveland	WOC	Des Moines
WWJ	Detroit	WCTD	St. Paul
WVAL	Chicago		

The proven Dry Cell for all Radio Dry Cell Tubes

EVEREADY COLUMBIA IGNITOR DRY CELL
FOR RADIO IGNITION
GENERAL PURPOSES
MADE IN U.S.A.
NATIONAL CARBON CO.

Recommend good batteries

IN AN effort to reduce the first cost of a radio set, a newcomer in radio often buys inferior batteries. You know such "saving" is really wasteful. Tell your friends who are about to buy receivers that the best batteries obtainable will prove to be the most economical. Tell them to buy Eveready Radio Batteries—they last longer and, because they are greatly superior, they give complete satisfaction.

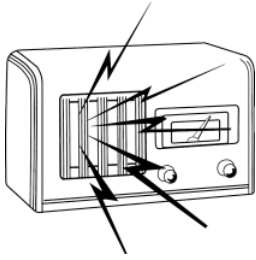
There is an Eveready Radio Battery for every radio use.

Manufactured and guaranteed by
NATIONAL CARBON COMPANY, INC.
New York San Francisco
Canadian National Carbon Co., Limited, Toronto, Ontario

EVEREADY Radio Batteries
—they last longer

No. 77B
45-volt
Extra
Large
Vertical
Price
\$4.75
For use
in multi-
tube sets

No. 767
45-volt
Large
Horizontal
Price
\$3.75
With
variable
taps



The Latest CRC Club News

The November 13th CRC club meeting was held at the Bemis Library in Littleton. Mike Cook filled in for Paul Heller and conducted the meeting. The meeting, as usual featured a raffle table filled with donations to the club. Merrill Campbell did an excellent Show and Tell on a 30 year anniversary Remler Model 5500 radio from 1948 that he just recently found at an estate sale. Two new members, Paul Klein and Greg Dewit were also present.



Mark your calendar!! To those of you who are new to the club, the CRC holds its Annual Show in conjunction with the Vintage Voltage Expo. It was announced at the November meeting that the next Vintage Voltage Expo will be on March 26th, 2023. The 2023 location will again be at the Northglenn location, I-25 at 120th Avenue. After mulling through several suggestions, it was decided that the "**Specialty**" category for this year's Vintage Voltage show is "**AM and FM Radios**". The radio must have both bands. AM of course refers to the current Broadcast Band, FM could be the old 42-50 MHz band and/or the current 88-108 MHz band. Multi-band sets with SW also are OK, and tube or transistor sets are welcome. So, this would include sets from the mid 1930's through the 1960's and beyond. Rich Kuberski and Ralph Brands again kindly volunteered to be the Show Coordinators this year. More details will be discussed at the January club meeting and listed in the next issue of The Flash.



[Click for website.](#)

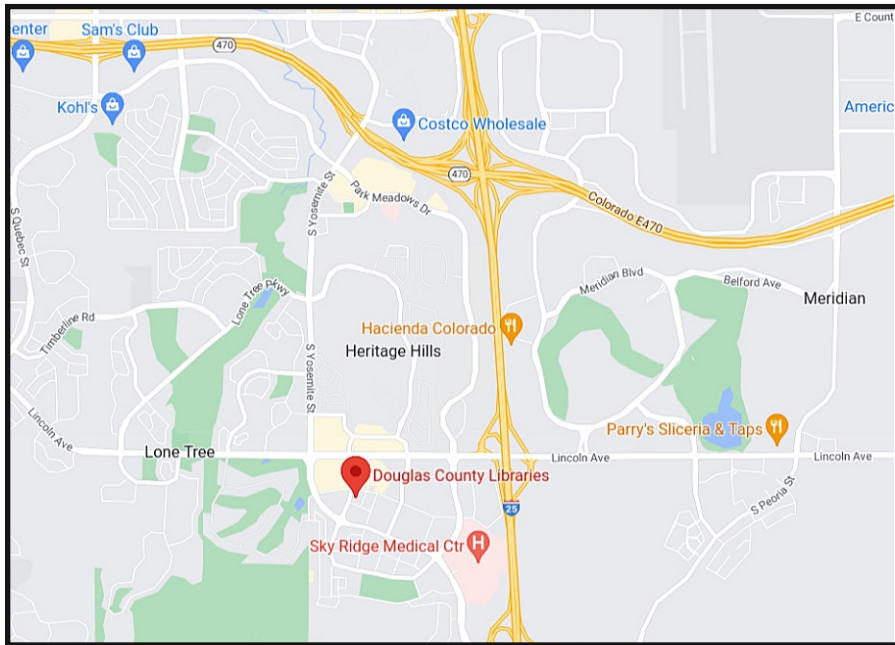
Several other items were discussed during the meeting by those in attendance. Ways of using social media to attract new members was one item. Greg Dewit brought up several ways for the club to possibly use Facebook. Possible different club meeting locations in the upcoming year was also brought up. The Lone Tree Library and the Highlands Ranch Library may have to be used for meeting locations this coming year along with the Castle Rock Library and the Littleton Library. Check the Flash and group emails for the upcoming CRC meeting location throughout the year.



Important Notice: Shortly after the November meeting we were able to verify that the January 8th, 2023 CRC club meeting will indeed be held at [The Lone Tree Library](#) in The Event Hall, located at 10055 Library Wy, Lone Tree, CO 80124.

On November 17th, CRC member Bill Potorti sent out a group email announcing that he had started a Facebook group for CRC club members and was encouraging club members to join. There are currently 22 members in the Facebook group. The group is a "learning experience" as it moves forward but it should prove to be a viable part of our club. There are several features that could possibly be added in the future. If you are on Facebook and have not yet joined you should check it out. The link to the Facebook group is: <https://www.facebook.com/groups/1132691767366259>.

The January 8th CRC Meeting at 1:00 PM is at a **New Location**. The meeting is in The Event Hall at **The Lone Tree Library** located at **10055 Library Wy, Lone Tree, CO 80124**



The Lone Tree Library is located near the Sky Ridge Medical Center and is accessible from either C470 or I-25 to Lincoln Ave. then to the library. Refer to the maps. The meeting is in the Event Hall. A pizza party is also planned.

